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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/624,929

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Takanori Maeda

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WASHINGTON, DC 20005-1209

EXAMINER

DINH, JACK

ART UNIT

PAPER NUMBER

2873

DATE MAILED: 11/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/624,929	<b>Applicant(s)</b> MAEDA ET AL.	
	<b>Examiner</b> Jack Dinh	<b>Art Unit</b> 2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 08/24/05.  
2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 17-22 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☒ Claim(s) 1-4, 17-20 is/are allowed.  
6) ☒ Claim(s) 5-8, 21 and 22 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 23 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☒ Certified copies of the priority documents have been received in Application No. 09/793,646.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input checked="" type="checkbox"/> Other: <u>DETAILED ACTION</u> .                  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 5-8 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kowarz et al. (US Patent 6,335,831) in view of Wang et al. (US Patent 6,211,993).

Regarding claims 5, 7 and 8, Kowarz (figure 10, not drawn to scale) is interpreted as disclosing a variable optical element comprising a first area **55b** and a second area **64b** that are different in thickness (height 55b and 64b), wherein optical changes are imparted on the wavefront of light made incident onto the first and the second areas to reflect the light based on changes in optical characteristics of the first and the second areas caused by electrostatic force, wherein diffraction efficiency is changed for the light made incident on the first and the second areas based on phase changes in the first and second areas (col. 8, lines 17-54). Kowarz is interpreted as disclosing all the claimed limitations except for a piezo-electric medium layer on the first area. However, Kowarz further discloses that it is clear that a person skilled in the art can imagine other ways for actuating the variable optical element, for example, thermal actuation, piezoelectric actuation or any combination (col 6, lines 62-67). Within the same field of endeavor, Wang (figure 1) is interpreted as disclosing the teaching of a piezoelectric medium

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layer **104** that changes in the thickness as a result of a piezoelectric effect corresponding to voltages externally applied (col. 5, lines 12-21). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a piezo-electric medium layer on the first area, for the purpose of increasing the thickness of the first area so the heights of the first and second area are equal (see figure 9) to create diffraction patterns.

Regarding claim 6, Kowarz (figure 10) is interpreted as further disclosing a plurality of pairs of the first and the second areas are formed one after another in a cyclic manner.

Regarding claim 21, Kowarz (figure 1) is interpreted as further disclosing the most basic configuration for light diffraction, comprising a plurality pairs of the first and second areas that are formed one after another so as to have a structure so that bent line-shaped grooves **14** following a wave front to be given to diffracted light and convexities **13** are implemented one by one in a cyclic manner.

2. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kowarz et al. (US Patent 6,335,831) in view of Wang et al. (US Patent 6,211,993), as applied to claim 5, and further in view of Brazas, Jr. et al. (US Patent 6,181,458).

Regarding claim 22, Kowarz in view of Wang is interpreted as disclosing all the claimed limitations as described above except for dielectric reflector layers provided on the first and second areas respectively. Within the same field of endeavor, Brazas is interpreted as disclosing this teaching (col. 2, lines 22-35). Therefore, it would have been obvious to one of ordinary skill

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in the art at the time the invention was made to provide the dielectric reflector layers, for the purpose of enhancing diffraction efficiency.

***Response to Arguments***

3. Applicant's arguments with respect to claims 1-4 have been fully considered and are persuasive. The previous rejections of claims 1-4 have been withdrawn.

Regarding claim 5, the Applicant provided arguments for claims 1 and 5 together. However, most of the features mentioned in the arguments are only in claim 1 and not in claim 5. It is unclear if the Applicant has provided a clear argument for independent claim 5, but the arguments provided have been fully considered but they are not persuasive.

***Allowable Subject Matter***

4. Claims 1-4 and 17-20 allowed in light of the Applicant's arguments. The following is a statement of reasons for the indication of allowable subject matter. Regarding claim 1, the prior art fails to disclose a second area without the piezo-electric medium layer.

***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jack Dinh whose telephone number is 571-272-2327. The examiner can normally be reached on M-F (9:30 AM - 6:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky L. Mack can be reached on 571-272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jack Dinh

  
RICKY L. MACK  
PRIMARY EXAMINER